capacitive, infrared, strain gauge, optical imaging, dispersive signal technology, acoustic pulse recognition, frustrated total internal reflection or magneto-strictive technology, as understood by one of ordinary skill in the art.

Coupled to one or more display devices **122** are pressure sensors **123** and optionally heating elements **127**. Coupled to computer bus **140** are one or more input/output (I/O) controller **116**, I/O devices **118**, GPS device **114**, one or more network adapters **128**, and one or more antennas **130**. Device **100** may have one or more motion, light, optical, chemical, environmental, water, acoustic, heat, temperature, radio frequency identification (RFID), biometric, face recognition, image, or voice recognition sensors **126** and touch detectors **124** for detecting any touch inputs, including multi-touch inputs, for one or more display devices **122**. One or more interface controller **104** may communicate with touch detectors **124** and I/O controller **116** for determining user inputs to device **100**.

Shape detectors **125** may be configured in combination with touch detectors **124**, display(s) elevation, indenting, or texturizing controller **121**, one or more display devices **122**, pressure sensors **123**, or sensors **126** to determine the shape, geometry or texture of an object placed on one or more display devices **122**, as will be explained in more detail below.

Still referring to device **100**, storage device **110** may be any disk based or solid state memory device for storing data. Power source **112** may be a plug-in, battery, solar panels for receiving and storing solar energy, or a device for receiving and storing wireless power as described in U.S. Pat. No. 7,027,311 herein incorporated by reference as if fully set forth. One or more network adapters **128** may be configured as a Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Orthogonal Frequency-Division Multiplexing (OFDM), Orthogonal Frequency-Division Multiple Access (OFDMA), Global System for Mobile (GSM) communications, Enhanced Data rates for GSM Evolution (EDGE), General Packet Radio Service (GPRS), cdma2000, wideband CDMA (W-CDMA), long term evolution (LTE), 802.11x, Wi-Max, mobile Wi-MAX, Bluetooth, or any other wireless or wired transceiver for modulating and demodulating information communicated via one or more antennas **130**. Additionally, any of devices, controllers, displays, components, etc. in device **100** may be combined, made integral, or separated as desired.

FIGS. **2***a*-**2***e* are diagrams of elevated, indented, or texturized display devices. In FIG. **2***a* layer **204** lays in proximity to display device layer **202** with layer **203** providing separation. Although a single layer is shown, layers **202**, **203**, and **204** can be composed of a plurality of sublayers. In one embodiment, a particular sublayer within **204** can be transflective to reflect any ambient light and emit white light, such as the average light emitted by surrounding display pixels or cells, so that the displayed image is clear. Display device layer **202** can be either a flexible or rigid display device. Layer **204** can be configured and composed of a clear, flexible, electroactive polymer, polymer composite, or gel material. Electroactive polymers (EAPs), also known as electroactive plastics, can be pulled, expand, contract, deform, change shapes in controllable directions, change dimensions in predetermined directions, or change sizes electronically by applying an electric current, potential difference, voltage, time varying voltage, or electromagnetic fields across the material, as described in U.S. Pat. Nos. 6,117,296, 6,787,238, US Patent Publication No. 2008-188907, US Patent Publication No. 2004-199232, US Patent Publication No. 2005-157893, WO Publication 2007-114699 and "Electric Flex" by Yoseph Bar-Cohen (2001) all herein incorporated by reference as if fully set forth.

Electroactive polymers (EAPs) may be dielectric or ionic EAPs. For dielectric EAPS, actuation can be caused by electrostatic forces between two electrodes that squeeze or compress the polymer. Although requiring a high actuation voltage, dielectric EAPS consume very little power and require no power to keep an actuator at a given position. Examples of dielectric EAPs are electrostrictive polymers and dielectric elastomers that are used for artificial muscles. For Ionic EAPs, actuation is caused by the displacement of ions inside the polymer. Only a few volts are needed for actuation, but the ionic flow implies a higher electrical power needed for actuation, and energy is needed to keep the actuator at a given position. Examples of ionic EAPS are conductive polymers, ionic polymer-metal composites (IPMCs), and responsive gels.

In another embodiment, layer **204** can also be configured and composed of piezoelectric materials or actuators that are bonded to a firm plastic component to form a piezo bending element, as explained in "TPaD: Tactile Pattern Display" by Colgate and Peshkin (2007) herein incorporated by reference as if fully set forth. When a potential difference is applied to a bonded or constricted piezoelectric material it changes shape. The shape change can be controlled electrically to provide different surface textures, indentation, and elevation.

In another embodiment, layer **204** can also be configured and composed of organic transistors formed on a flexible substrate to drive or contract a surface creating texture, indentation, or elevation. Organic transistors are transistors that use organic molecules rather than silicon for their active material. An advantage of organic transistors is the ability to operate on a flexible substrate. Similar to EAPs, organic transistors also exhibit material properties such that they can be pulled, expand, contract, deform, change shapes in controllable directions, change dimensions in predetermined directions, or change sizes electronically by applying an electric current, potential difference, voltage, time varying voltage, or electromagnetic fields.

Still referring to FIG. **2***a,* portions of surface **216** are selectively elevated, indented, or texturized with one or more substantially cubicle segment **206**, dot or dimple segment **208**, substantially cylindrical segment **210**, bulge segment **212**, or indentation segment **214**. The shape and texture of the indented or elevated portion depends on the image, document, or application to be displayed and the effects on the resolution of the display device. Because of their natural geometry, certain segments may provide a clearer display of the underlying image or document. Segments **206**, **208**, **210**, **212**, and **214** are controlled at least by displays controller **120** and controller **121** that adjust the height, indentation, or depression to multiple different levels, orientation, hardness, thickness, direction, vibration, or gyration individually for each segment. Display(s) elevation, indenting, or texturizing controller **121** may comprise of analog or digital driving circuits (not shown) for driving the segments. Examples of display driving circuits are given in US Patent Publication Nos. 2008-062088, 2006-221016, or 2006-007078 all herein incorporated by reference as if fully set forth.

In FIG. **2***a,* the operation and configuration of layer **204** may be independent of display device layer **202** thereby simplifying manufacturing since it can be an add-on or attachment to preexisting display systems or technologies. Also, in certain applications images may not be displayed on surface **216** in an area that is elevated, indented, or textur-